

**CONFIDENTIAL**Field Burial Program of Selected MaterialsBurial Containers Weapons  
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Field trips were made for the purpose of selecting test sites which would be available and suitable for a burial program of selected materials. A report regarding the materials to be buried will be submitted in the near future. The purpose of this report is to make recommendations for the test sites to be used in the investigation.

Areas were surveyed, soils were tested in sites, and soil samples were collected for laboratory tests at the Bureau in the following places: U. S. Coast Guard Yard, Curtis Bay, Md; U. S. Coast Guard Receiving Station, Cape May, N. J.; U. S. Coast Guard Electronic Station, Wildwood, N. J.; U. S. Coast Guard Lifeboat Stations at Townsends Inlet, Corsons Inlet, Ocean City, Atlantic City, Brigantine and Little Egg Inlet, N. J.; and a site owned by the Cast Iron Pipe Research Association in Absecon, N. J.

In considering the selection of test sites, it is necessary to have regard as to the availability of labor, without charge to the Bureau, for excavating the trenches during burial and removal of the corrosion specimens. With this in mind, descriptions of soils in the following locations are offered as available test sites.

1. Hagerstown loam located at the Loch Raven reservoir of the Baltimore Water Department. This is a well-drained moderately corrosive soil located on a moderate slope. This soil is representative of the majority of well-developed soils found in the Eastern part of the United States. The soil consists of a brown loam to a depth of about 12 inches, underlain by a reddish brown clay which extends below 60 inches to the underlying rock. The specimens will be buried at depth of 36 inches. The soil has an electrical resistivity of 5,200 ohm-cm and a pH of 5-6. Practically all the materials, which have been investigated by the Bureau in the extensive field tests since 1922, have been buried at this test site for exposures up to 14 years. As a result, it will be possible to correlate the data to be obtained from the specimens in the new burial program with the data obtained from the burials made in the past.
2. Tidal marsh soil located at the end of Ocean Avenue at Absecon Bay (adjoining the Sea View Country Club Golf Course) in Absecon, N. J. This site has been obtained through the cooperation of the Cast Iron Pipe Research Association. This soil is typical of the areas of tidal marsh which are developed along the Atlantic and Gulf coasts. The test site is on almost level land and is wet most of the year, the driest season occurring during the summer. The profile of the soil to a depth of 12 inches consists of a bluish-gray silty clay, mottled rusty brown, and containing an abundance of plant roots and decomposed vegetable matter due to the growth of plant roots. Below 12 inches the soil consists of a bluish gray silty clay containing some plant roots. Salt hay grows abundantly on the surface. The subsoil is charged with hydrogen sulfide. Drainage of the site is very poor, and on drying the soil changes to a light gray color. The soil has a resistivity 54 ohm-cm and a pH of 7.2.

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3. Clay soil located in a large clay pit on level land in the southwest corner of the U. S. Coast Guard Receiving Center at Cape May, N. J. Although this site has probably been filled in by artificial means in the past, the soil appears to be a uniform clay throughout the pit. The growth of weeds occur in scattered patches. The soil consists of a plastic gray clay to a depth of 6 inches. From 6 to 12 inches the gray clay is mixed with patches of brown to rust-colored clay. This is underlain by a very heavy plastic gray clay. Drainage at this site is very poor. The soil has a resistivity between 250 and 375 ohm-cm, and is very acid as indicated by a pH of 3.5.

4. Coastal sand located along the Atlantic coast (near the groin at end of the main runway) in the south central part of the reservation of the U. S. Coast Guard Receiving Center, Cape May, N. J. This site consists of a typical white coastal beach sand, with a high content of black sand in places. The latter occurs in the form of streaks. This part of the beach is flooded during high tides. The sand has a pH of 7.7 and a resistivity of 450 ohm-cm. The low resistivity is due to the soluble salts from the sea water which saturates the sand frequently.

5. Sandy soil located on the property of the U. S. Coast Guard Electronic Station, Wildwood, N. J. The sand at this site can be classified as coastal beach or perhaps as Lakewood sand. It is a white loose sand with some black streaks occurring in places. The site is located behind the Electronic Station in an area that is not subject to overflow from the ocean except under flood conditions. The area is rolling, well-drained and supports the growth of beach grasses abundantly. The sand has a pH of 7.8. The high resistivity of 27,000 ohm-cm indicates the absence of soluble salts at the site.

6. Coastal sand located at the U. S. Coast Guard Lifeboat Station between Atlantic City and Brigantine, N. J. This area has the possibility for providing two test sites.

(a) Along the ocean front the beach consists of a uniform sand to a depth of at least 5 feet. The sand is black and constantly saturated with sea water. The sand has a resistivity of 150 ohm-cm, and a pH of 6.9.

(b) Parallel to the beach, referred to above, is a cliff about 4 feet in height. Above the cliff is a level stretch of well-drained land consisting of a yellowish sand which is uniform to a depth of at least 5 feet. This sand has a resistivity of 36,600 ohm-cm, and a pH of 5.3.

Labor for the sites at Loch Raven, Md. and Absecon, N. J. will be provided by the Bureau of Water Supply (Baltimore) and the South Jersey Gas Company, respectively. At the remaining sites which are located on U. S. Coast Guard Reservations, the labor will be supplied by the Coast Guard.

Sites itemized as 1 (Hagerstown loam), 2 (tidal marsh) and 3 (clay soil) should definitely be included in the program. In addition to these, a choice of the sandy soils remains between either sites 4 and 5, or 6a and 6b. Either combination of these sandy soils will give two typical coastal sand sites, one of which is constantly saturated with sea water, and other being well-drained and free of the soluble salts from sea water except under extreme flood conditions. The choice of the combination of sand soils to be used will be left to the Coast Guard officials whose decision will be based on the availability of the required labor.

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In addition to the test sites mentioned above, another test site under consideration is an alkali soil, which will be typical of the alkali soils found on the West Coast of the U. S. This site will be located in the vicinity of Bonneville Dam in the state of Washington. Arrangements for procurement of this test site is being made through the cooperation of the Kaiser Aluminum Company.

These six test sites consisting of Hagerstown Loam, tidal marsh, clay soil, well-aerated coastal sand free of soluble salts, poorly-aerated coastal sand saturated with sea water, and an alkali soil will render a well-rounded soil corrosion program, in that relatively non-corrosive to very corrosive soils will be included in the investigation. Furthermore, it will be possible to correlate the data to be obtained from these tests with the data obtained previously from the 128 test sites, involving 95 different soil types, in the NBS investigations on underground corrosion.

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